

Ronald J. Brey
6815 Academy Trail
Rockford, Illinois 61107
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Commission's Secretary
Office of the Secretary
Federal Communications Commission
Washington, DC

Re: MB Docket No. 03-15, RM 9832

COMMENTS TO FCC 03-08:
Second Periodic Review of the Commission's Rules and Policies
Affecting the Conversion to Digital Television

BACKGROUND OF COMMENTER

I am making these comments as a private citizen. My family frequently views television signals beyond the NTSC Grade B contour. We use two rooftop receiving antennas approximately 9 meters above the ground, same as used in the FCC propagation charts, F (50.10), etc. Our edition of *TV Guide* covers four markets. So when we see a program we want to watch, we rotate the antenna for the set we are watching to point in the appropriate direction. The receiving equipment used is readily available from local television antenna installers. We also have basic cable TV, which we use about 5% of the time. The family spends about two-thirds of its TV time watching Grade B stations, about one-third watching stations beyond their Grade B contour but within line-of-sight transmission (Madison, WI, and Chicago, IL), and on rare occasions watching something beyond line-of-sight (Milwaukee, WI). I have been viewing television signals beyond the Grade B contour for over 35 years in four different cities, three different states.

In our television market we have no PBS, UPN, WB, or PAX network outlets. These networks and independents are available over-the-air from adjacent markets. Some of those stations are available on cable TV; some are not. We have only CBS, NBC, ABC, and Fox stations in our market. Television from adjacent markets gives us additional choices and provides some competition to cable and satellite.

My technical background includes a master's degree in Electrical Engineering from the University of Illinois. I have worked as a chief engineer of an AM radio station with a directional array and an FM station. I have also performed non-technical roles in radio and television. Currently I have no direct ties to the television industry.

COMMENTS TO PARAGRAPHS 27 AND 28

With regard to allowing stations to swap their digital channel for their analog channel, I noticed that this could cause potential interference problems in our area. Since many of the DTV co-channel station separations have roots in their original analog station separations derived from 47 C.F.R. § 73.610, there is an extra margin of interference protection over the minimum digital separations in 47 C.F.R. § 73.623. I would recommend not pushing the laws of physics too hard. Propagated wave signal strengths vary considerably so the “desirable-to-undesirable” ratio is not constant. It would be better to use the minimum DTV co-channel station separations in § 73.623 as infrequently as possible during the “shakedown cruise” of DTV. The modulation scheme is different for DTV, but the waves have to travel through the same old medium and over the same old terrain.

Hence, my recommendation for applicable swap petitions is that the Commission try to preserve the wider separations whenever possible during the transition phase by using § 73.610 criteria for minimum co-channel DTV station to DTV station separation.

DTV has a significantly higher picture quality level than NTSC, let us not be hasty in reducing its reception quality and reliability by cramming too many stations into a channel at the bare minimum separation. Things that look good on paper or after a short-term study do not always turn out that way in the real world. The following paragraphs give an example of the potential problems based on what I see in our viewing area.

EXISTING INTERFERENCE

Since we currently do not own a DTV receiver (price and size are the factors), I can only extrapolate what DTV interference levels might be like. However, some analog TV interference problems are severe enough to give me concern about DTV interference levels. I do know that the digital signals are receivable here from Chicago 120 km (75 miles) away, and the video quality is an “all” in the digital realm of “all or nothing.”

In our area we have experienced analog TV signal degradation from DTV stations operating on analog TV channels. The first degradation occurred on channel 26 where WKOW-DT, Madison, WI, 90 km (55 miles) away from us, interfered with WCIU-TV, Chicago, IL, 120 km (75 miles) away. (In spite of the distance, prior to the DTV interference WCIU-TV was very watchable and available virtually 100% of the time.) The interference caused a very significant deterioration in the signal-to-noise ratio of the video of WCIU-TV. Since a DTV signal looks like noise on an NTSC receiver, the video deterioration appeared to be equivalent to WCIU-TV cutting their power by a factor of 10. I do not know how closely that level of interference fits the theory of what was predicted. Careful aiming of a directional receiving antenna (gain around 12 dB) was necessary to try to minimize the signal from WKOW-DT to maximize the video signal-to-noise ratio of WCIU-TV. Whereas before, the receiving antenna only needed to be aimed in the general direction of Chicago.

When the interference initially occurred on channel 26, I talked to the chief engineer of WCIU-TV. He said that he had received a number of telephone calls from our area wondering what happened to their signal. So what I had observed was not unique.

The situation has been repeated to varying degrees with other Madison stations interfering with Chicago stations. Interference to Madison analog stations from Chicago DTV stations has been less apparent because the Chicago stations being 30 kilometers (20 miles) farther away have less signal strength than the Madison stations at our location. Also some of the DTV stations may not be built out to maximum power at this time.

CHANNEL 19 CONFLICT

As the Table of Allotments now stands, channel 19 has an allotment for Madison and Chicago. This is a shorter spacing than § 73.610 would allow, but probably just squeezes in under the wire in § 73.623. My experience with DTV into analog TV interference makes me very suspicious that with both stations occupying channel 19, the interference is going to be objectionable in our area. Even if the 15 dB ratio of desirable-to-undesirable seems to be met on paper, my experience indicates that atmospheric conditions, particularly ducting, will result in unstable viewing conditions as the signals from the two stations collide at my location. The height of the transmitting antennas, particularly in Chicago, enhances the ducting effect. I would hate for my location to become the “poster child” for pushing the limits of mileage separation beyond what the bands can tolerate. Directional receiving antennas are notorious for smaller lobes (pattern maxima) to the sides and rear, so the 10 to 14 dB directivity afforded by the antenna is helpful, but not an infallible cure. A 15 to 25 dB increase in signal strength from propagation ducting will overpower the advantages of the receiving antenna’s rear signal rejection. Ducting occurs very frequently during the warmer months of the year. For our area some channel swapping regarding channel 19 could be helpful, if not crucial.

POTENTIAL CONFLICTS

The other Madison/Chicago DTV allotments are not co-channel. However, if complementary Madison and Chicago DTV stations are allowed to swap DTV and analog channels, it would be beneficial for them to do so in tandem, e.g., if Chicago’s DTV 21 changes back to its analog 20, Madison’s DTV 20 should change back to its analog 21 to prevent co-channel DTV operation. Making certain that the Chicago and Madison stations are not on the same channels will also allow the stations in both localities some geographic flexibility in upgrading their facilities in the future.

The Madison and Chicago channels where there are DTV/NTSC interactions are:

3, 11, 19 (DTV-to-DTV), 20, 21, 26, 27, 32, 47, 50.

Channel 32 is allotted to Janesville, WI, part of the Madison market. Channels 3 and 11 being VHF have greater required mileage separations in § 73.623 than the UHF channels, so co-channel operation should be precluded, and hence not be a problem.

I would suspect that there might be other situations similar to the Madison/Chicago one occurring in other parts of the country. I suggest that a strong weighting be given toward maintaining the separations given in § 73.610 for DTV to DTV co-channel spacings when the issue of channel swapping is addressed.

Déjà Vu

Another potential problem is Rockford’s DTV channel 42 next to Chicago’s 43. The analog counterparts of those stations have Rockford’s channel 39 causing adjacent channel interference to Chicago’s 38 in our market, in spite of meeting analog spacing requirements. So if the inherent adjacent channel rejection of DTV is insufficient to overcome the problem, here is a situation where one station doing a channel swap back to an NTSC channel might be good.

COMMENTS ON LPTV INTERFERENCE

CONFLICTS WITH FULL POWER DTV

A conflict that may need resolving is an analog Class A station on channel 51 in Rockford. That same channel is allotted for a full power DTV in Chicago. While the Class A remains analog, DTV receivers may be able to "look through" the Class A, but the situation will become untenable if the LPTV goes digital on that channel. I am not sure if § 73.6013 and § 73.6018 (or something else) will be sufficient to remedy the situation. But clearing Class A, other LPTV, and translator stations from full power channels should not be the responsibility of the local citizenry.

The analog LPTV on channel 23 in Chicago delivers heavy interference to some of the viewing area of the analog full power station on channel 23 of Rockford, Illinois. The Commission should review that situation to prevent a reoccurrence with DTV when LPTV stations change channels. In the case of the channel 23 problem, if the LPTV station had been on channel 22, it would have been directionalizing its signal away from the nearest co-channel full power station rather than right at it.

From practical experience I would recommend that LPTV stations be spaced at least 10 km (6 miles) from the edge of line-of-sight reception at 9 meters above ground of adjacent channel full power TV stations. This results in more receivable stations. In the Rockford market we have had multiple LPTV stations operate on adjacent channels to Chicago full power stations, which for some viewers obliterated the adjacent Chicago station. If an LPTV licensee is more discriminating in the location of transmitter facilities, rather than the LPTV station knocking out the distant reception of a full power station, the viewers get two stations: a full power and an LPTV. A win-win situation can occur, but LPTV licensees and future licensees currently have no incentive to make it happen. To a large extent, the over-the-air viewers are the lifeblood of LPTV stations. By blocking full power stations, the LPTV's can wind up cutting their own throats. The marketplace will take care of that eventually, but the viewers wind up with less service in the interim.

Are there going to be frequency coordinating committees to deal with low power television assignments in a community?

COMMENTS TO SECTION I: DTV LABELING REQUIREMENTS AND CONSUMER AWARENESS

Regarding informing consumers of the differences between the various types of equipment that can be used to receive DTV and the need for converters for analog TV's, I would suggest a checklist grid attached to the viewing screen of the equipment. With the notice on the screen it will be hard to miss. If the equipment, such as a separate converter box, does not have a screen, then the checklist could be attached to a prominent location like the top. The checklist could also appear on the shipping carton so mail order customers could make a determination of equipment appropriateness prior to opening the carton.

The following is an example of a checklist grid.

EQUIPMENT CAPABILITIES		
SIGNAL	HDTV	ANALOG TV
Over-the-Air Reception		YES
Cable		YES
Satellite		
Digital Converter Input	YES	
Picture	YES	YES
Sound	YES	YES
Video Output	YES	
Audio Output	YES	
Video + Audio Output		YES

The checklist grid above would be for an HDTV-ready TV set without built-in HDTV tuning capability. The set can display a picture and has built-in loudspeakers so you can see and hear a program without additional equipment. There is a combination signal of analog video and sound, but none for HDTV. By carefully using terms or icons, electronic line-level video and audio can be distinguished from picture and sound, which are sensory outputs destined for the eye and ear. A converter box would have no picture or sound, but could have video and audio outputs. The checklist grid could have additional rows to specify Dolby 5.1 sound outputs, etc. However, if quantities of inputs and outputs are specified, the checklist may get too complicated and lose its “quick reference” advantage.

I used the term “HDTV” instead of “DTV” in the checklist because in my perception the public is going to have a difficult time distinguishing between the intermediate “digital” delivery of cable signals that are converted back to analog versus a DTV signal that stays digital for the entire transmission journey. Even though the term “HDTV” is a subset of “DTV,” it probably has better name association with broadcast digital TV than any other “digital” term. Otherwise, a phrase such as “Totally Digital TV (TDTV)” could be used instead of “HDTV” to keep “HDTV” free from misconceptions.

I used the term “analog TV” instead of “NTSC” because the public is generally not familiar with the term “NTSC.” Since they have not heard of it before, some consumers may think “NTSC” is some hot new technology that can’t be passed up.

A separate listing of equipment capabilities should be enclosed with or be a part of the instruction manual as part of the equipment specifications. During the conversion period, the consumers should have the equipment capability spelled out in some detail.

COMMENTS TO SECTION J: DISTRIBUTED TRANSMISSION TECHNOLOGIES

I have a particular concern with distributed technologies with respect to interference to full power DTV stations beyond their Grade B contour. At least with LPTV and translator stations, a viewer may get lucky and be far enough away from the LPTV or translator station to receive minimal or no interference to a full power station. However, if the transmitters are “all over town” the interference is likely to be blanketing, wiping out any chance for any of the viewers in the area to view the full power station.

COMMENTS TO PARAGRAPH 121

Concerning the inclusion of v-chip functionality in the PSIP, I believe this needs to be mandatory in order to work. If any DTV broadcaster is not broadcasting program rating information, a diligent parent either has to delete that station's entire content, if possible, or be back at "square one" trying to monitor what a child is watching. Over-the-air television program content historically has been non-offensive across the board. That is not the case anymore. I have been tempted to turn off the circuit breaker to the outlet for one of our TV's to limit late night viewing. I would much prefer to have a functioning v-chip with password-protected access to the setup. However, if there are holes in the v-chip functionality or coverage, I am not going to take the time to deal with a partial cure to the problem. V-chip program control is like digital reception: you've either "got it or you don't." I think we need it. (We could use a v-chip for radio, too.)

GENERAL ALLOTMENT QUESTION

Are allotments eventually going to be added to reserve full power channels for future use? Since our market does not have a PBS outlet, and the analog allotments for nearby Freeport, IL, and DeKalb, IL, did not translate to the DTV table of allotments, does that relegate our market to never having an educational allotment? If the open channels clog up with Class A's and other LPTV's, the possibility may be doomed forever.

Sincerely,

Ronald J. Brey